

On the Fossil Remains of Camelidæ of the Sewaliks. By CAPT. CAUTLEY,
Artillery.

“But the most interesting discovery was that of a Camel, of which the skull and jaw were found. It is to be observed that no decisive proof of any of the Camelidæ, either camel, dromedary, or lama, had ever been hitherto found among fossil bones, although Cuvier had proved certain teeth brought from Siberia to be undoubtedly of this family, if they were really fossil, which he doubted. This discovery in India was therefore extremely interesting, as, supplying a wanting genus. But for this very reason, it became the more necessary to authenticate the position of this supposed camel's remains the more clearly, especially as there were abundance of existing camels in the country, which there could not be in Siberia. The Indian account is somewhat deficient in this respect, leaving us in doubt whether the bones, admitted to bear a very close resemblance to the living species, were found in a stratum, or loose and detached.” *Dissertations on subjects of science connected with Natural Theology, by Henry Lord Brougham, F. R. S. &c. vol. ii. pp. 213, 214, 1839.*

It is only within the last few months, that the most interesting volumes from which the above is an extract have reached this remote part of India; long as the extract is, however, its introduction may be permitted, as affording us the opportunity of removing all doubts of the existence of the camel among the Fossil Fauna of the Sewaliks, by a few supplementary remarks, which a reperusal of the original paper published in the Transactions of the Asiatic Society of Bengal, with reference to the paragraph above quoted, renders necessary.

To those who have interested themselves in the discovery of the fossil remains, which has been made in the Sewaliks, it need hardly be necessary to allude to the two very distinct states in which the mineralization has taken place: that in which the fossil is impregnated more or less with iron in the form of a hydrate, and that where the calcareous elements of the bone are nearly or entirely unaltered, and the medullary hollows filled with matrix; the former universally existing in those remains extracted from the sandstone rock, the latter from the subordinate beds or substrata, either consisting of clay, or an admixture of clay, sand, and shingle. The difference in external appearance is remarkable; the sandstone fossil being to a common observer an organic substance converted into stone, whereas that which is found in the clay strata, not only conveys an idea of a lesser antiquity, but looks like a substance merely in a progressive state of petrification.

As the beds of clay, &c., are *inferior* in position to the extensive sandstone strata, the palm of antiquity rests with the fossils of the clay. These

very imperfect and half-fossilized looking remains, being evidently of older date than those of the sandstone.

With very few exceptions, the only remains that have been discovered, scattered on the faces of the mountains, or in the ravines and water-courses which drain them, are those from the sandstone strata; those from the lower beds appear to be of a quality too little indurated to withstand the effects of weather and exposure. The greater proportion of the latter, amongst which are some of our most interesting genera, viz., *Simia*, *Anoptothæria*, *Camelidæ*, &c. were *exhumed*, removed out of the parent strata in which they were originally embedded. The remains of Ruminants and Rhinoceroses brought to light in this way, were singularly striking; numerous crania of both families, in many cases not having shed their milk teeth, being found closely and compactly imbedded together, the stratum of rock being a perfect Golgotha, not of the skeletons of old and worn out animals, but of those who were cut off when young, or in the prime of their existence.

In the osteology of the camel there are certain distinctive marks, which at once separate it from the true Ruminantia, laying aside the peculiarities of the cervical vertebræ, in the absence of perforations for the vertebral arteries in their transverse processes, which, with the atlas excepted, is universal in the family, and separates it not only from the Ruminants, but from all other existing Mammalia. There are two very simple points of difference, which can never be mistaken by the most careless observer, the 1st, being the want of ankylosis in the lower extremities of the metatarsal and metacarpal bones,—that of the camel exhibits itself in a cleft or separation of the two bones, to a distance of two or three inches from the articulating surface, whilst the same bones of the Ruminants are perfectly undivided: and, secondly, in the marked distinction existing in the carpal bones of the camel, in the separation of the scaphoid and cuboid, these two bones being joined together in the true Ruminantia.

Of these metatarsal and metacarpal bones, we have forwarded specimens both to the British Museum and to the Geological Society of London, extracted from the lower beds of the Sewalik strata, as well as from the sandstone rock; numerous other specimens of the same family have also been sent to England the more perfect remains of crania being still in our possession, although ultimately intended for the British Museum.

The most valuable remains of *Camelidæ*, which have as yet been discovered in those hills, and which were figured in the Transactions of the Bengal Asiatic Society, were *dug out in my presence*. The stratum in which they were found consisted of a sandy clay, inclined at an angle to the horizon of about 20 degrees, the position about half a mile north-east of the

village of Moginund, which lies at the foot of the range, and the elevation about 4 or 500 feet above that village. These fossils were removed by a working party over whom I was standing, and taken to my camp immediately afterwards; there can be no demurrer on their being fossil remains, for even had they not been exhumed before me, their state of fossilization is a proof of their not having belonged to the existing family; and the position in which I found them was such, that laying aside their being a part of an inclined stratum of rock, no camel of the present day, at least, could have reached such an awkward locality, the excavation having taken place at the head of a deep ravine, terminating in a slip, in a wild precipitous region, far away from the habitation of man, and far removed from even the grazing ground of village cattle.

In the paper above referred to, certain specific differences are noted between the fossil and existing camel, which *a fortiori* establish the discovery of the animal in the former state; as these appear to have been overlooked by Lord Brougham, I will, in referring your readers to the memoir in question, note, that the most remarkable points of dissimilitude were in that portion of the cranium connected with the lower jaw, the breadth between the articulating or glenoid surfaces for the condyles of the latter, being much greater than that in the animal now existing—a peculiarity not confined to one solitary specimen, but common to others, amongst which was a very perfect cranium of a second species, for which we proposed the name of *C. antiquus*, procured from the sandstone strata. With the marked difference above alluded to, it was natural to expect some modification in form to the condyles and rami of the lower jaw; in this we were not disappointed; the obliquity of the ascending branches similar to that of the ox, their form, and the excess of transverse diameter of the condyle, were points of great difference between the fossil and living animal; and in total correspondence with the peculiarities of the cranium; it will be observed, that the difference of structure in the skull is by no means of trifling importance, and as far as the subject of this paper is concerned, is evidence that the bones found by us could never have been the remains of the animals now existing in India.*

That the camel lived at the same time with the Sivatherium, Anoptotherium Simia, Hippopotamus, Rhinoceros, and with the very prototype of the Crocodiles and Gurials now abounding in the great rivers and estuaries of Modern India, there can be no doubt of, as far as the researches on the Sewalik hills have exhibited proofs.

* At the lower extremity of the metatarsals and metacarpals the cleft appears to be somewhat less in the fossil than in the existing camel; in the latter the separation of the points of articulation is somewhat greater, a remark drawn from an inspection of a great number of fossil remains of this part of the animal.

As a fossil discovery, the camel is of great interest; its position with regard to the Pachydermata and Ruminants, is a link of a now broken chain. The Sivatherium was one, and Mr. Owen's *Macrauchenia* was another, to explain the mystery, and add two links to a broken series. That future discovery will tend still further to prove the wisdom of design as an inference, is borne out, by every succeeding step in Palæontological Research.

Whether the camel has existed in an originally wild state in any period within the historical era, is a question that has been argued at considerable length. The animal in a state of domestication is spoken of during the early period of the Scriptural writings, and by subsequent authors at all periods of history; it is mentioned by Strabo and Diodorus Siculus, as having been found in a wild state in Arabia about the commencement of the Christian era.

Pallas who argues on the evidence of the Tartars, that the wild camel is found in Central Asia, is met by Cuvier in the well known fact, of the Culmuks being in the habit of giving liberty to all sorts of animals on religious principles: the natives of Hindostan, who act in the same way, and are guided by similar motives, have in their affection for the cow and ox, given rise to a race of wild cattle perfectly distinct from those of the forest. In the districts of Akbarpoor and Dostpoor, in the province of Oude, large herds of black oxen are, or were, to be found in the wild and uncultivated tracts; a fact to which I can bear testimony from my own personal observation, having in 1821 come in contact with a very large herd of these beasts, of which we were only fortunate enough to kill one, their excessive shyness and wildness preventing us from a near approach at any second opportunity. The wild horses of Southern America, are another proof of the tendency of animals to congregate in herds, and assume the character of originally wild animals, although properly the offspring of domesticated cattle set at liberty; the proof, however, after all, is merely in the possibility of domesticated animals being able to return again to a state of nature, and assume the functions of their primitive designation.

The object of this paper is merely to establish the fact of the camel having been found in a fossil state in the Sewalik hills, the identification being more complete perhaps than that of any other of the numerous genera and species which these hills have made us acquainted with. Judging from the number of the remains of this family in our collections, the camel could not have existed in great abundance, and their proportion to the true Ruminants, must have been comparatively small.

Northern Doab,

Sept. 8th, 1840.

NOTE.—Professor Wilson's work, compiled from the papers of Messrs. Morecroft and Trebeck is not procurable in Calcutta, or I should cite, on better authority than mere recollection, Mr. Trebeck's mention of the wild camel as now existing. I regret exceedingly I did not take a note of the passage which occurs in Mr. Trebeck's journal of a tour in Sadakh, and which mentions the confines of the great Tartaric plain as the alleged tract in which the camel is still found in a state of nature. The question is one on which even Gibbon's immense reading (*Miscell. Works. vol. i.*) throws no light beyond the caution of the authority of Diodorus Siculus, as noted by Capt. Cautley (*Lib. iii. Capt. 44.*) The only copy of Professor Wilson's work that I have seen or heard of in India, was in the possession of Sir Alex. Burnes, who while at Simla sent it to me.



Proceedings of the Asiatic Society.

(*Wednesday Evening, 2nd September, 1840.*)

Dr. John GRANT, Senior Member, in the chair.

Major RAWLINSON, Political Agent at Candahar, proposed at the last Meeting, was elected a Member of the Society.

The Secretary shewed to the Meeting an Astrolobe which had been prepared at Benares for Mons. Théroulde.

The following gentlemen were then proposed as Members,

M. P. EDGEWORTH, Esq.

Capt. W. LOVEDAY, *ditto.*

Capt. T. HUTTON, *37th Regt. N. I.*

Dr. J. D. D. HEBERLIN.

Captain KITTOE presented to the Society the egg of an Alligator, and the egg of the Caprimulgus (rarely found), with some specimens of precious serpentine found near Sumbhulpore.

Several papers were submitted to the Society, which either have appeared, or are in course of preparation for the Journal; two Reports by the late Dr. HELPER, on the Mergui Archipelago, were among these.

Specimens of the Ground Fish of the eastern part of Bengal were presented by — White, Esq. of Kishnaghur, they were dug up from a depth of twelve feet below the surface of the earth in Nuddeea. For notice of this fish, vide *Asiatic Society's Journal vol. viii. p. 551.*

A model of a Monster communicated by Colonel CAULFIELD, Resident at Lucknow, was made over to the Medical College.

A letter was read from Professor WILSON, stating that arrangements have been made for preparation of the bust of our late Secretary Mr. James PRINSEP; thanks of the Society were voted to Professor WILSON, for having thus anticipated the wishes of the Society.